2006-08 ENGINE

Cooling System (R18A1) - Civic (Except Hybrid)

COMPONENT LOCATION INDEX

NOTE: Refer to the COOLING SYSTEM (GX) (SUPPLEMENT) article for additional information for the GX model.

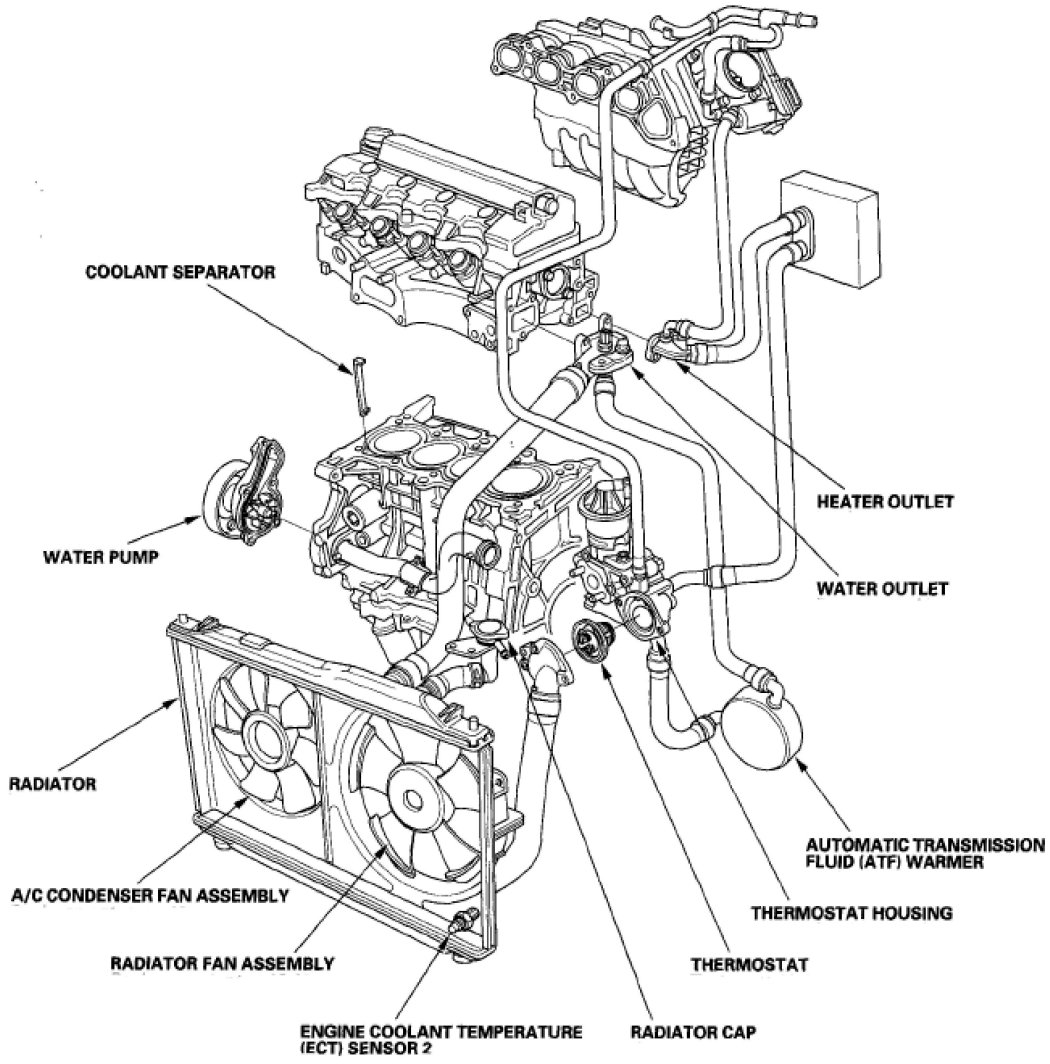

Fig. 1: Identifying Component Location Index
Courtesy of AMERICAN HONDA MOTOR CO., INC.

RADIATOR CAP TEST

1. Remove the radiator cap (A). Wet the seal with engine coolant, then install it on a commercially available pressure tester (B).

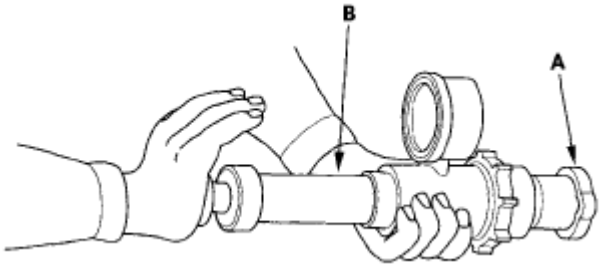

Fig. 2: Testing Radiator Cap
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Apply a pressure of 93-123 kPa (0.95-1.25 kgf/cm^2 , 14-18 psi).
3. Check for a drop in pressure.
4. If the pressure drops, replace the cap.

RADIATOR TEST

1. Wait until the engine is cool, then carefully remove the radiator cap, and fill the radiator with engine coolant to the top of the filler neck.
2. Attach a commercially available pressure tester (A) to the radiator, and apply a pressure of 93-123 kPa (0.95-1.25 kgf/cm^2 , 14-18 psi).

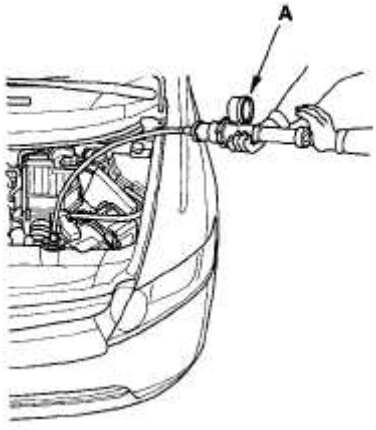

Fig. 3: Testing Radiator
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Inspect for engine coolant leaks, and a drop in pressure.
4. Remove the tester, then reinstall the radiator cap.
5. Check for engine oil in the coolant and/or coolant in the engine oil.

FAN MOTOR TEST

1. Disconnect the 2P connectors from the radiator fan motor (A) and condenser fan motor (B).

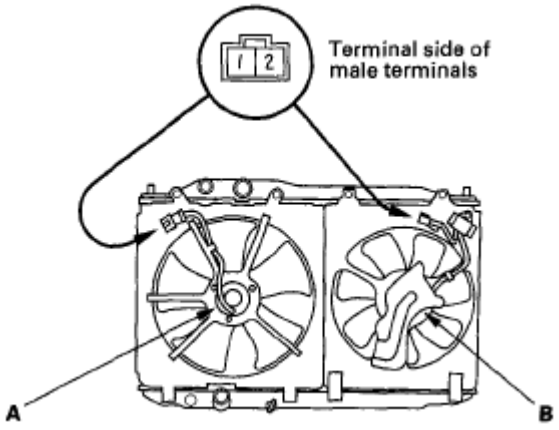

Fig. 4: Identifying Radiator Fan Motor And Condenser Fan Motor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Test each motor by connecting battery power to the No. 2 terminal and ground to the No. 1 terminal.
3. If either motor fails to run, or does not run smoothly, replace it (see **RADIATOR AND FAN REPLACEMENT**).

THERMOSTAT TEST

Replace the thermostat if it is open at room temperature.

To test a closed thermostat:

1. Suspend the thermostat (A) in a container of water. Do not let the thermometer (B) touch the bottom of the hot container.

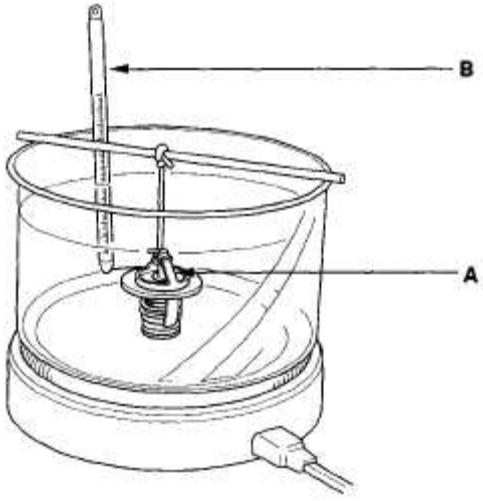

Fig. 5: Checking Temperature When Thermostat Opens
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Heat the water and check the temperature with a thermometer. Check the temperature when the thermostat first opens, then check the temperature when the thermostat is fully open.
3. Measure the lift height of the thermostat when it is fully open.

Standard Thermostat

Lift Height: Above 8.0 mm (0.31 in.)

Starts Opening: 176-183 °F (80-84 °C)

Fully Open: 203 °F (95 °C)

WATER PUMP INSPECTION

1. Loosen the water pump pulley mounting bolts.

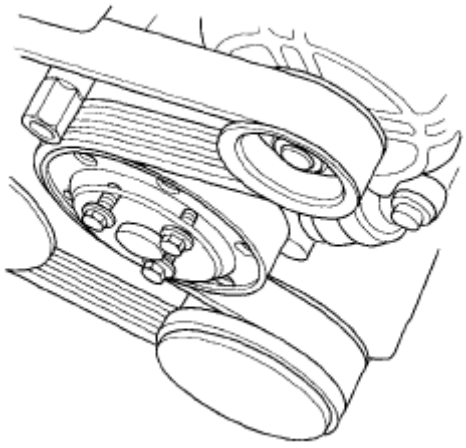

Fig. 6: Identifying Water Pump Pulley Mounting Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the drive belt (see **DRIVE BELT INSPECTION**).
3. Remove the water pump pulley.

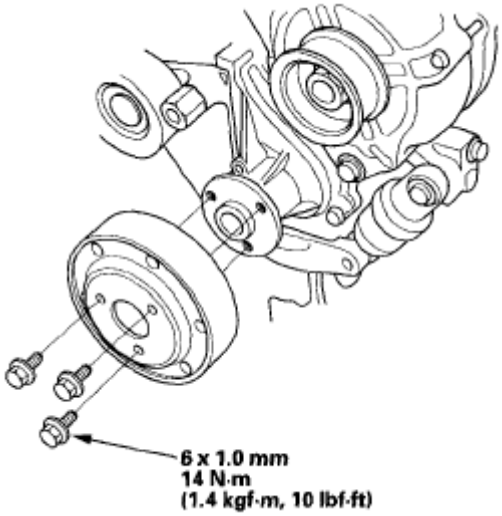

Fig. 7: Identifying Torque Specifications Of Water Pump Pulley Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Turn the water pump counterclockwise. Check that it turns freely. If doesn't turn smoothly, replace the water pump (see **WATER PUMP REPLACEMENT**).

NOTE: When you check the water pump, you may see a small

amount of "weeping" from the bleed holes (A). This is normal.

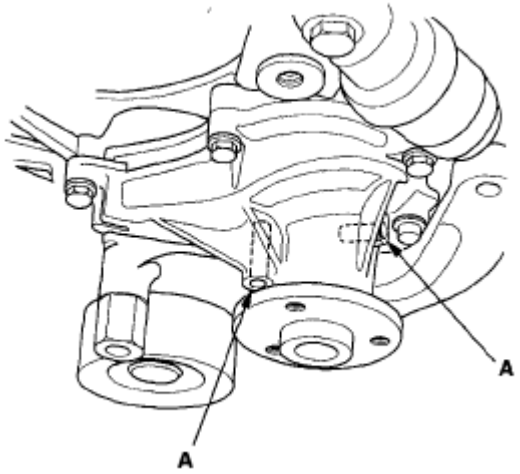

Fig. 8: Identifying Bleed Holes
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install the water pump pulley.
6. Install the drive belt (see **DRIVE BELT INSPECTION**).
7. Tighten the water pump pulley mounting bolts to the specified torque.

WATER PUMP REPLACEMENT

1. Drain the engine coolant (see **COOLANT REPLACEMENT**).
2. Remove the drive belt auto-tensioner (see **DRIVE BELT AUTO-TENSIONER REMOVAL/INSTALLATION**).
3. Remove the water pump (A) by removing the five bolts.

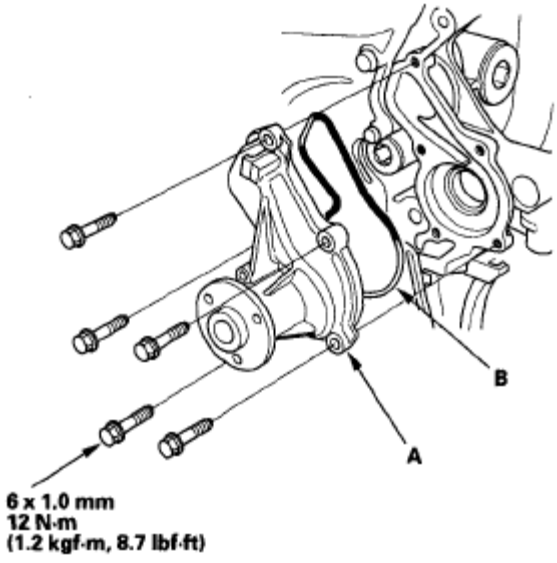

Fig. 9: Identifying Torque Specifications Of Water Pump Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Inspect, and clean the O-ring groove and the mating surface of the engine block.
5. Install the water pump with a new O-ring (B) in the reverse order of removal.
6. Clean up any spilled engine coolant.
7. Install the drive belt auto-tensioner (see **DRIVE BELT AUTO-TENSIONER REMOVAL/INSTALLATION**).
8. Refill the radiator with engine coolant, then bleed the air from the cooling system (see step 8).

COOLANT CHECK

1. Look at the coolant level in the coolant reservoir. Make sure it is between the MAX mark (A) and MIN mark (B).

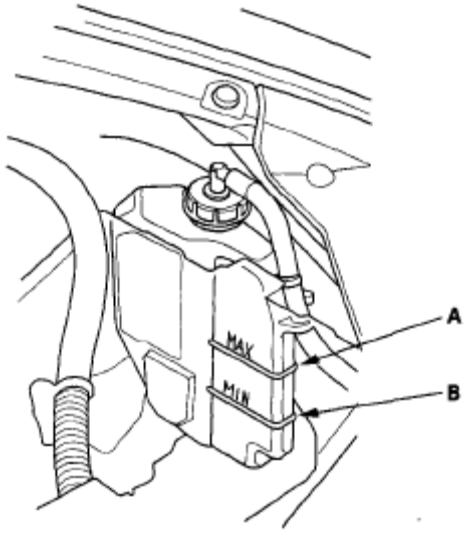

Fig. 10: Identifying Coolant Reservoir MAX Mark And MIN Mark
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. If the coolant level in the coolant reservoir is at or below the MIN mark, add coolant to bring it between the MIN and MAX marks, then inspect the cooling system for leaks.

COOLANT REPLACEMENT

1. Start the engine. Set the heater temperature control dial to maximum heat, then turn off the ignition switch. Make sure the engine and radiator are cool to the touch.
2. Remove the radiator cap.
3. Loosen the drain plug (A), and drain the coolant.

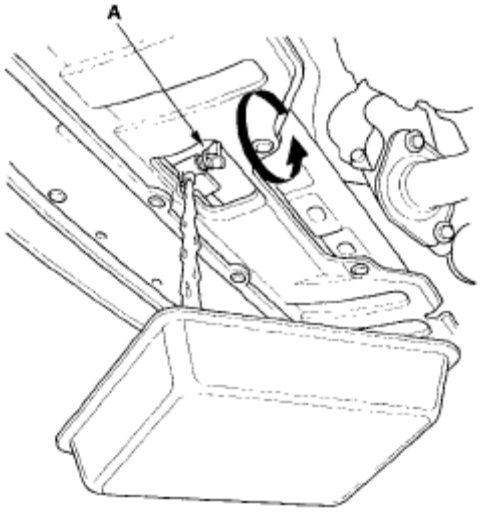

Fig. 11: Identifying Drain Plug
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the drain bolt (A) located at the front of the engine block.

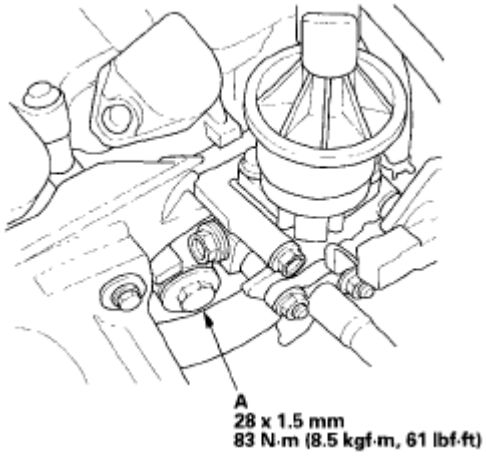

Fig. 12: Identifying Torque Specifications Of Drain Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. After the coolant has drained, apply liquid gasket to the drain bolt threads, then reinstall the bolt with a new washer and tighten it securely.
6. Tighten the radiator drain plug securely.
7. Remove the coolant reservoir, then drain the coolant, and reinstall the reserve tank.
8. Fill the reserve tank to the MAX mark (A) with Honda Long Life

Antifreeze/Coolant Type 2 (P/N OL999-9001).

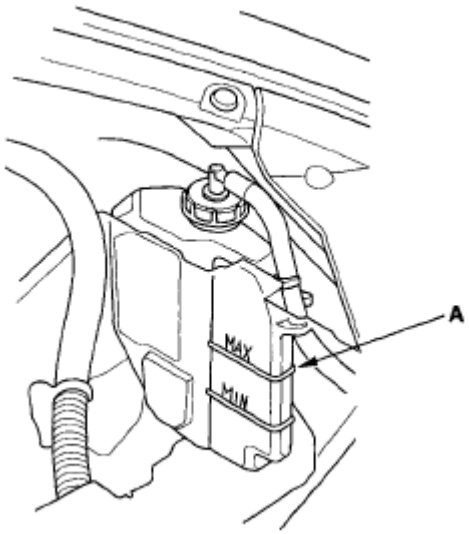

Fig. 13: Identifying Reserve Tank MAX Mark
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Pour Honda Long Life Antifreeze/Coolant Type 2 into the radiator up to the base of the filler neck.

NOTE:

- **Always use Honda Long Life Antifreeze/Coolant Type 2 (P/N OL999-9001). Using a non-Honda coolant can result in corrosion, causing the cooling system to malfunction or fail.**
- **Honda Long Life Antifreeze/Coolant Type 2 is a mixture of 50 % antifreeze and 50 % water. Do not add water.**

Engine Coolant Capacities (Including the reserve tank capacity of 0.4 L (0.11 US gal)):

4-door model:

M/T:

At Coolant Change: 5.2 L (1.37 US gal)

After Engine Overhaul: 6.5 L (1.72 US gal)

A/T:

At Coolant Change: 5.3 L (1.40 US gal)

After Engine Overhaul: 6.7 L (1.77 US gal)

2-door model:

M/T:

At Coolant Change: 5.2 L (1.37 US gal)

After Engine Overhaul: 6.5 L (1.72 US gal)

A/T:

At Coolant Change: 6.5 L (1.45 US gal)

After Engine Overhaul: 7.1 L (1.88 US gal)

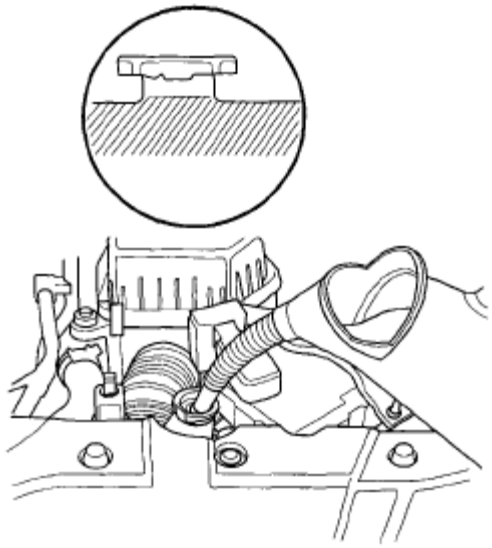

Fig. 14: Pouring Honda Long Life Antifreeze/Coolant Type 2 Into Radiator
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Loosely install the radiator cap.
11. Start the engine, and let it run until it warms up (the radiator fan comes on at least twice).
12. If the maintenance minder required to replace the engine coolant, reset the maintenance minder (see **RESETTING THE MAINTENANCE INFORMATION DISPLAY**), then go to step 20. If the maintenance minder did not require to replace the engine coolant, go to next step.
13. Connect the HDS to the data link connector.
14. Turn the ignition switch ON (II).
15. Make sure the HDS communicates with the vehicle and the ECM/PCM. If it doesn't, troubleshoot the DLC circuit (see **DLC CIRCUIT TROUBLESHOOTING**).
16. Select BODY ELECTRICAL with the HDS.
17. Select ADJUSTMENT in the GAUGES MENU with the HDS.
18. Select RESET in the MAINTENANCE MINDER with the HDS.
19. Select MAINTENANCE SUB ITEM 5 RESET with the HDS.
20. Turn off the engine. Check the level in the radiator, and add Honda Long Life Antifreeze/Coolant Type 2, if needed.
21. Put the radiator cap on tightly, then run the engine again, and check for leaks.
22. Clean up any spilled engine coolant.
23. Reset the maintenance information display (see **RESETTING THE MAINTENANCE INFORMATION DISPLAY**).

THERMOSTAT REPLACEMENT

1. Drain the engine coolant (see **COOLANT REPLACEMENT**).
2. Remove the harness clamp bracket and thermostat cover, then remove the thermostat.

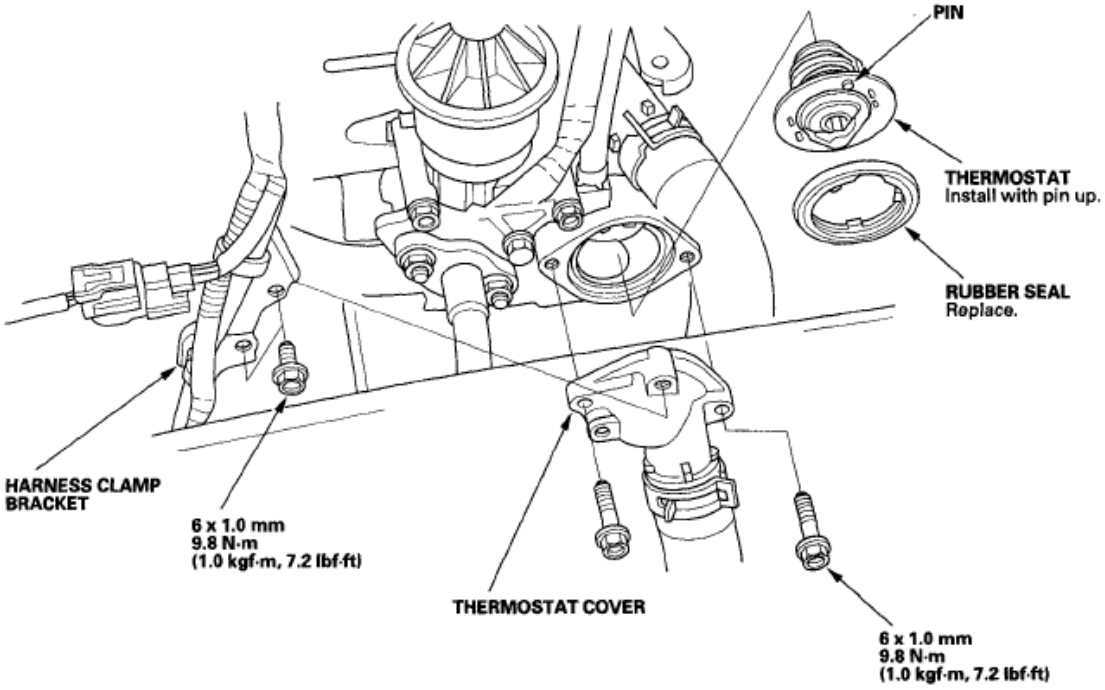

Fig. 15: Identifying Thermostat Cover With Tightening Torque
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the thermostat with a new rubber seal.
4. Refill the radiator with engine coolant, then bleed air from the cooling system (see step 8).
5. Clean up any spilled engine coolant.

THERMOSTAT HOUSING REMOVAL AND INSTALLATION

REMOVAL

1. Drain the engine coolant (see **COOLANT REPLACEMENT**).
2. Remove the air cleaner assembly (see **THROTTLE BODY CLEANING**).
3. Remove the harness bracket (A), and cover the air fuel ratio (A/F) sensor connector and secondary heated oxygen sensor (secondary H02S) connector with a tape to protect the connectors from engine coolant, then remove the lower radiator hose (B), the water bypass (C), and the heater hose (D).

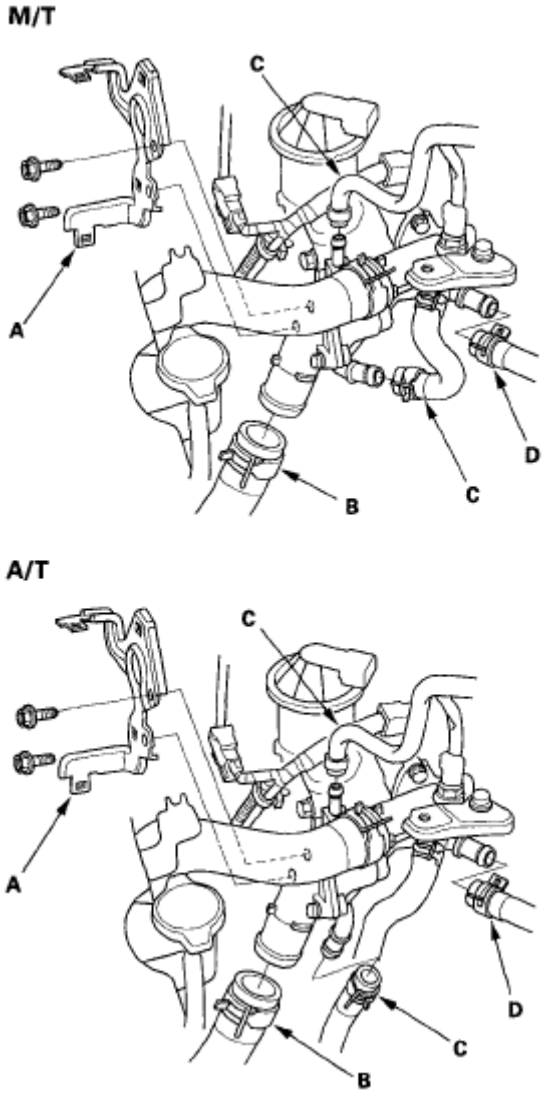

Fig. 16: Identifying Harness Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the exhaust gas recirculation (EGR) pipe.

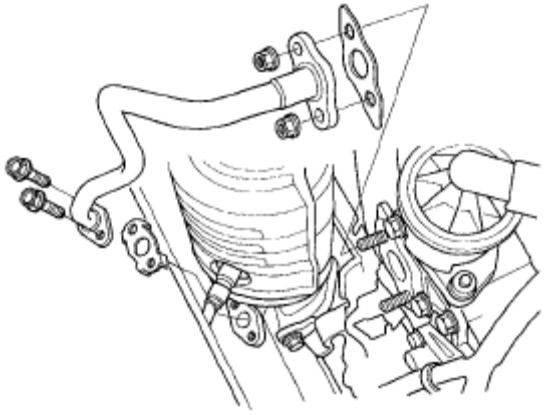

Fig. 17: Identifying Exhaust Gas Recirculation Pipe
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Disconnect the EGR connector.
6. Remove the thermostat housing.

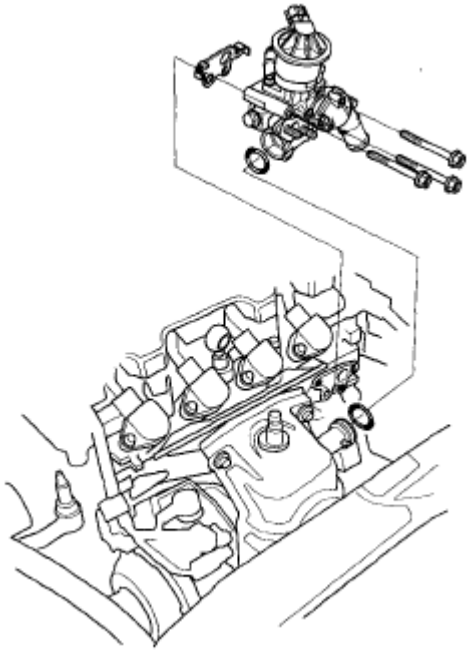

Fig. 18: Identifying Thermostat Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Remove the EGR valve (A), thermostat cover (B), and thermostat (C).

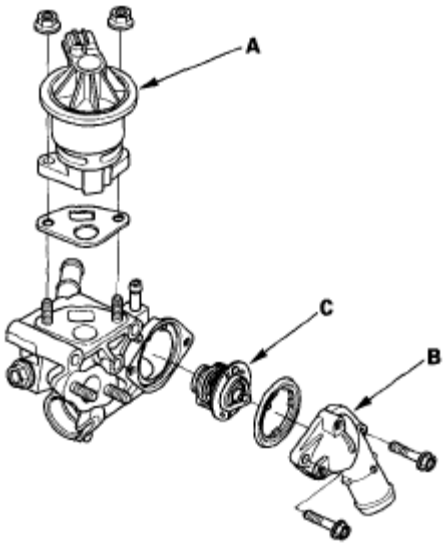

Fig. 19: Identifying EGR Valve, Thermostat Cover And Thermostat
Courtesy of AMERICAN HONDA MOTOR CO., INC.

INSTALLATION

1. Install the new rubber seal (A) onto the thermostat, then install the thermostat (B) with pin (C) up, and install the thermostat cover (D).

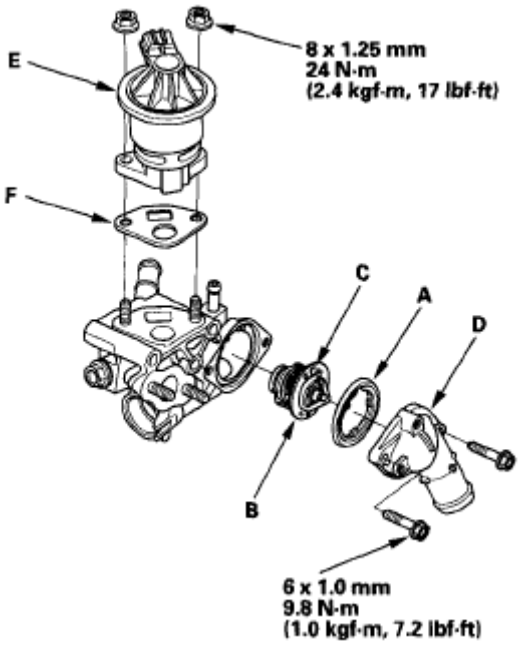

Fig. 20: Identifying Thermostat, Pin And Thermostat Cover With Tightening Torque

Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the EGR valve (E) with a new gasket (F).
3. Install the thermostat housing (A), using a new gasket (B) and new O-ring (C).

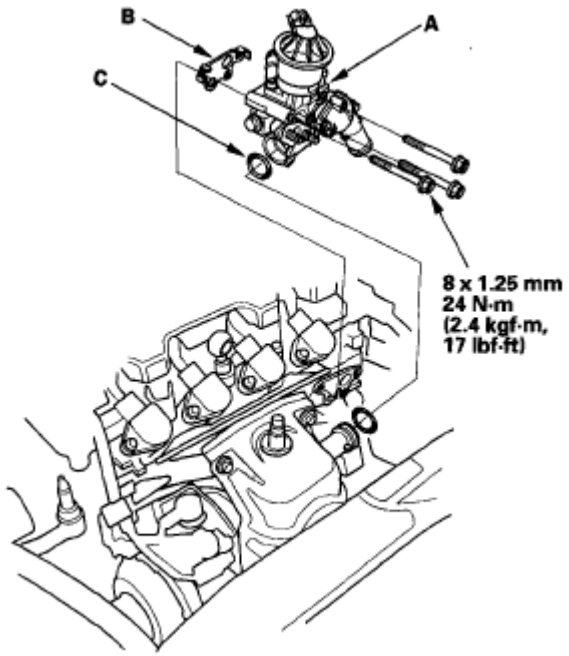

Fig. 21: Identifying Thermostat Housing, Gasket And O-Ring With Tightening Torque
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Connect the EGR connector.
5. Install the EGR pipe (A), using the new gaskets (B).

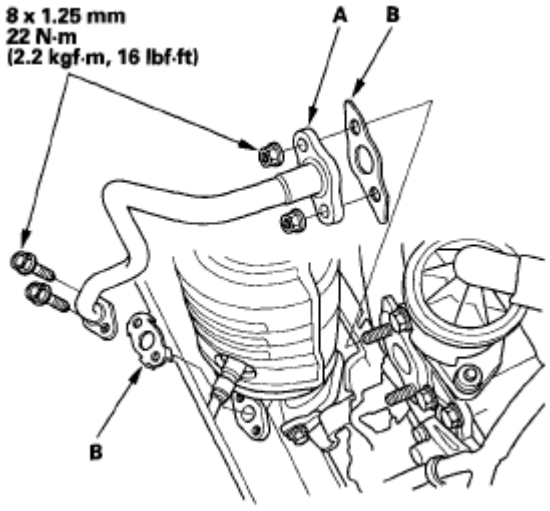

Fig. 22: Identifying EGR Pipe And Gaskets With Tightening Torque
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Install the lower radiator hose (A), heater hose (B), and water bypass hoses (C), then install the harness bracket (D).

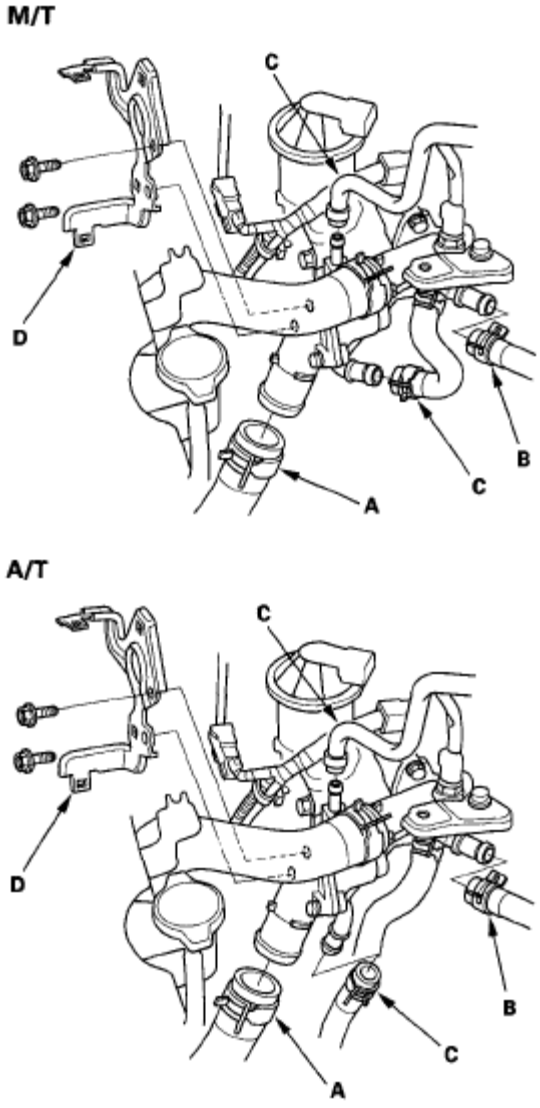

Fig. 23: Identifying Lower Radiator Hose, Heater Hose, And Water Bypass Hoses
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Install the air cleaner assembly (see **THROTTLE BODY CLEANING**).
8. Refill the radiator with engine coolant, and bleed the air from the cooling system with the heater valve open (see step 8).

WATER OUTLET REMOVAL AND INSTALLATION

REMOVAL

1. Drain the engine coolant (see **COOLANT REPLACEMENT**).
2. Remove the air cleaner assembly (see **THROTTLE BODY CLEANING**).
3. Remove the air cleaner housing bracket (A), then remove the harness holder (B) from the cylinder head.

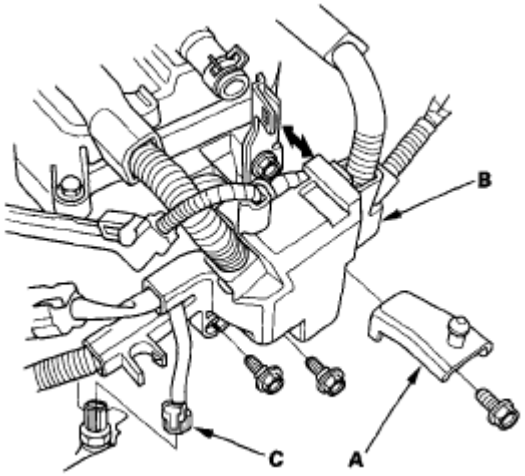

Fig. 24: Identifying Air Cleaner Housing Bracket And Harness Holder
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Disconnect the engine coolant temperature (ECT) sensor 1 connector (C).
5. Remove the air cleaner housing bracket (A), upper radiator hose (B), and water bypass hose (C).

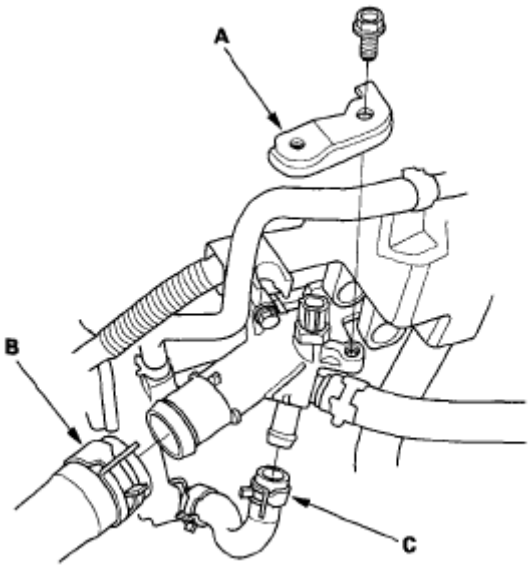

Fig. 25: Identifying Air Cleaner Housing Bracket, Upper Radiator Hose And Water Bypass Hose
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Remove the water outlet (A) and ECT sensor 1 (B).

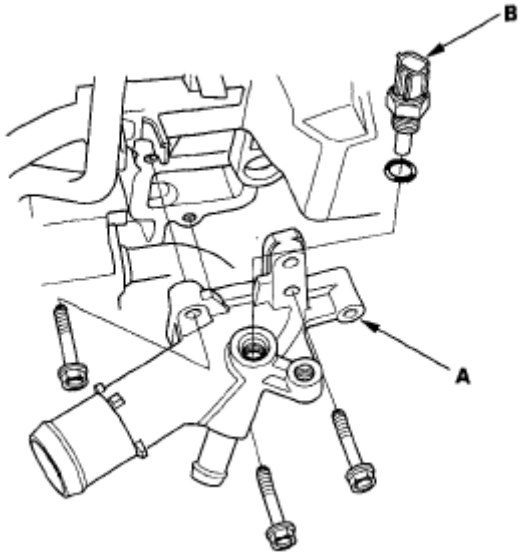

Fig. 26: Identifying Water Outlet And ECT Sensor 1
Courtesy of AMERICAN HONDA MOTOR CO., INC.

INSTALLATION

1. Remove all of the old liquid gasket from the water outlet mating surfaces, bolts, and bolt holes.
2. Clean, and dry the water outlet mating surfaces.
3. Apply liquid gasket, P/N 08717-0004,08718-0001, 08718-0002, 08718-0003, or 08718-0009, evenly to the cylinder head mating surface of the water outlet.

NOTE: Do not install components if too much time has passed after applying the liquid gasket (for P/N 08718-0002, no more than 4 minutes, for all others, no more than 5 minutes). Instead, remove the old residue and reapply the liquid gasket.

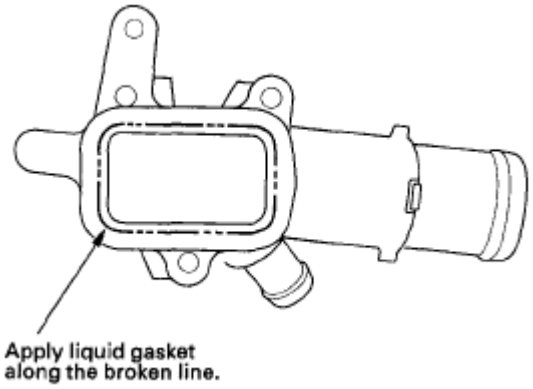

Fig. 27: Identifying Liquid Gasket Applying Line
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the water outlet (A), then install the ECT sensor 1 (B) with a new O-ring (C).

NOTE:

- **Wait at least 30 minutes to allow liquid gasket to cure before filling the engine with coolant.**
- **Do not run the engine for at least 3 hours to allow liquid gasket to cure after installing the water outlet.**

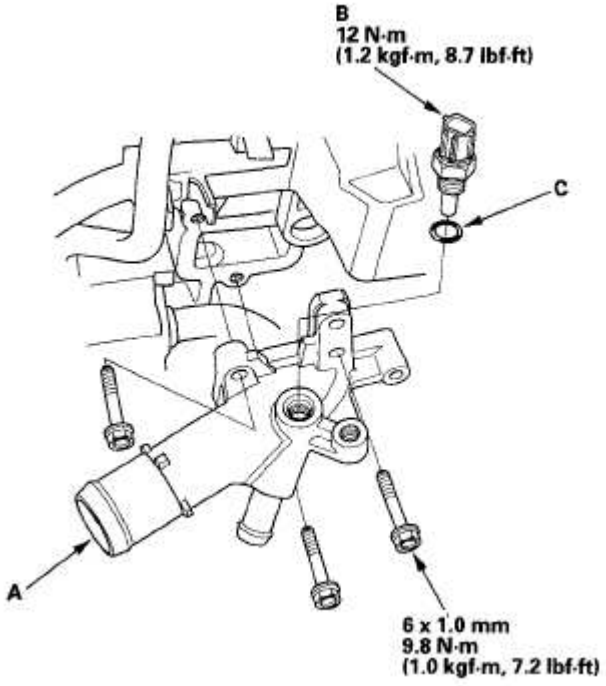

Fig. 28: Identifying Torque Specifications Of Water Outlet Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install the air cleaner housing bracket (A), upper radiator hose (B), and water bypass hose (C).

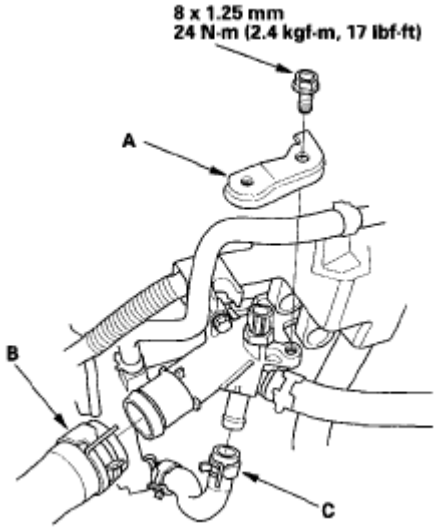

Fig. 29: Identifying Torque Specifications Of Air Cleaner Housing Bracket Bolt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Connect the engine temperature (ECT) sensor 1 connector (A).

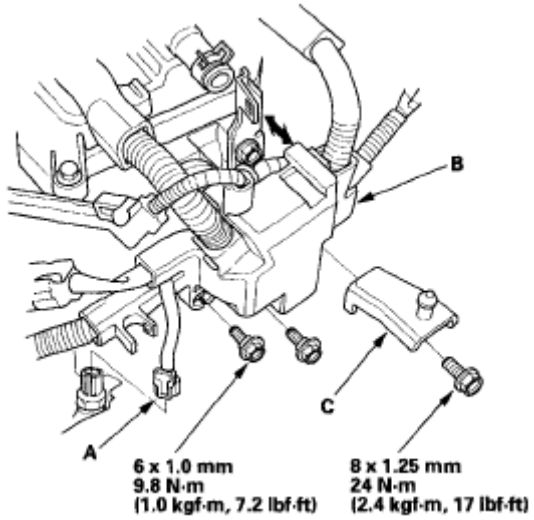

Fig. 30: Identifying Engine Temperature Sensor 1 Connector With Tightening Torques
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Install the harness holder (B) on the cylinder head, then install the air cleaner housing bracket (C).
8. Install the air cleaner assembly (see **THROTTLE BODY CLEANING**).
9. Refill the radiator with engine coolant, and bleed the air from the cooling system with the heater valve open (see step 8).

HEATER OUTLET REPLACEMENT

1. Drain the engine coolant (see **COOLANT REPLACEMENT**).
2. Remove the air cleaner assembly (see **THROTTLE BODY CLEANING**).
3. Remove the heater hose (A) from the clamp.

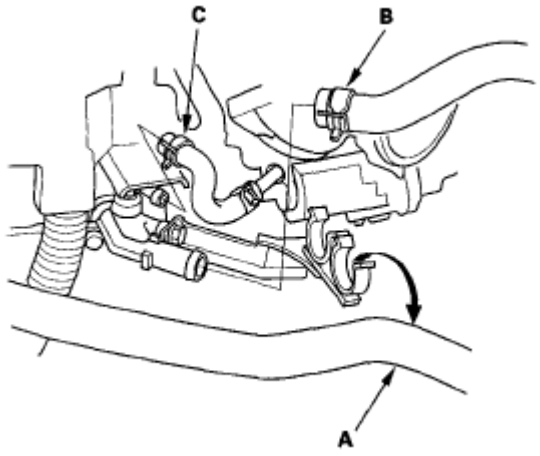

Fig. 31: Identifying Heater Hose
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the heater hose (B) and water bypass hose (C).
5. Remove the heater outlet (A).

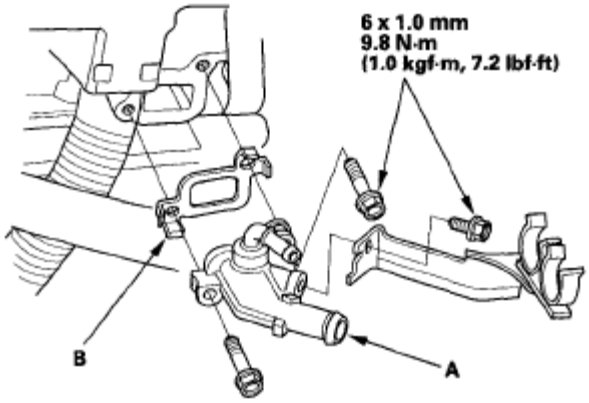

Fig. 32: Identifying Heater Outlet With Tightening Torque
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Install the heater outlet with a new gasket (B).
7. Install the other parts in the reverse order of removal.
8. Refill the radiator with engine coolant, and bleed the air from the cooling system with the heater valve open (see step 8).

RADIATOR AND FAN REPLACEMENT

1. Make sure you have the anti-theft code for the audio system and the navigation system (if equipped), then write down the audio presets.
2. Disconnect the negative cable from the battery, then disconnect the positive cable.
3. Remove the battery.
4. Drain the engine coolant (see **COOLANT REPLACEMENT**).
5. Remove the bulkhead cover.
6. Disconnect the fan motor connectors (A) and hood switch connector (B), then remove the harness clamps (C).

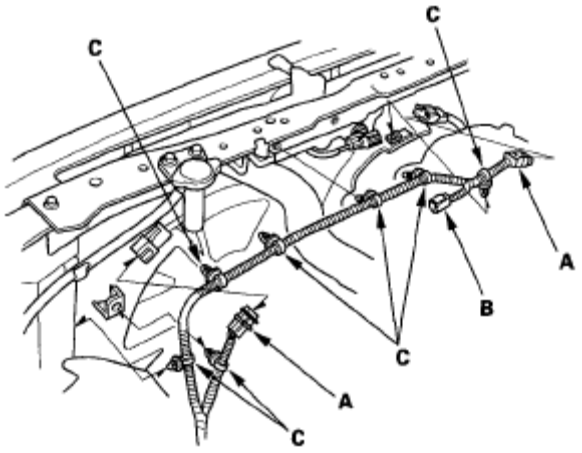

Fig. 33: Identifying Fan Motor Connectors And Hood Switch Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Remove the reservoir hose (A), radiator cap base mounting bolts (B), clips (C), and radiator upper brackets (D).

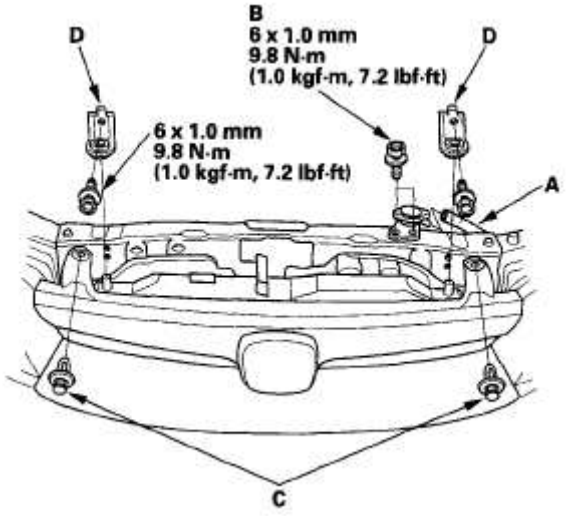

Fig. 34: Identifying Torque Specifications Of Radiator Cap Base Mounting Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Remove the upper radiator hose (A) and lower radiator hose (B).

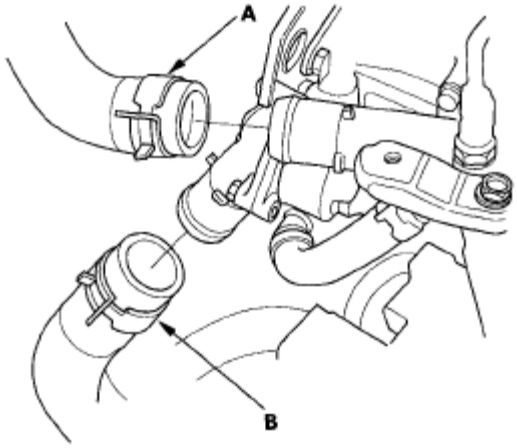

Fig. 35: Identifying Upper Radiator Hose And Lower Radiator Hose
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Remove the splash shield.

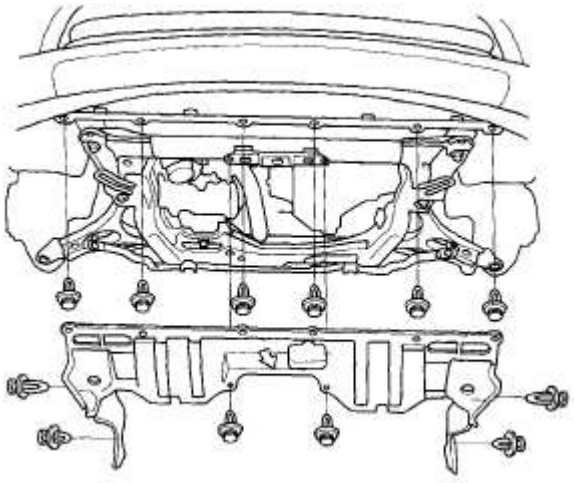

Fig. 36: Identifying Splash Shield
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Disconnect the engine coolant temperature (ECT) sensor 2 connector (A), and remove the harness clamp (B).

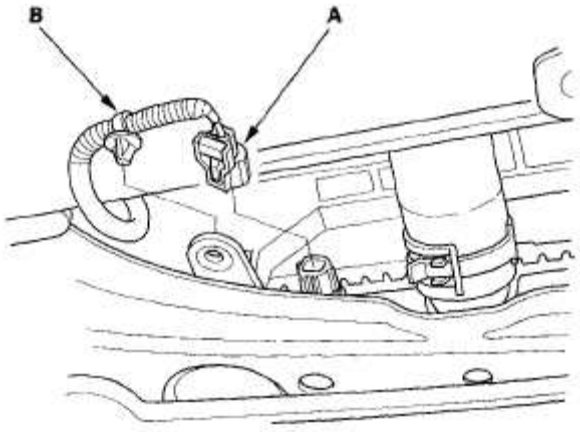

Fig. 37: Identifying Engine Coolant Temperature Sensor 2 Connector And Harness Clamp
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Remove the condenser bracket mounting bolts (A), then remove the bulkhead (B).

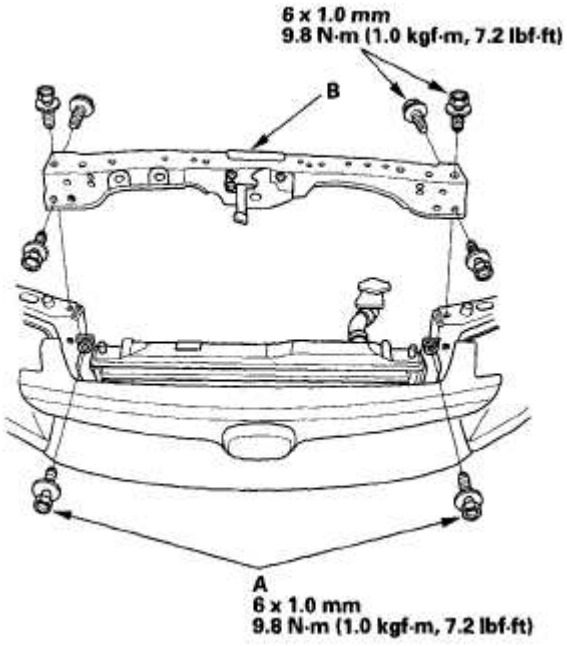

Fig. 38: Identifying Condenser Bracket Mounting Bolts And Bulkhead With Tightening Torque
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Pull up the radiator, then remove the fan shroud assemblies and other parts

from the radiator.

DENSO

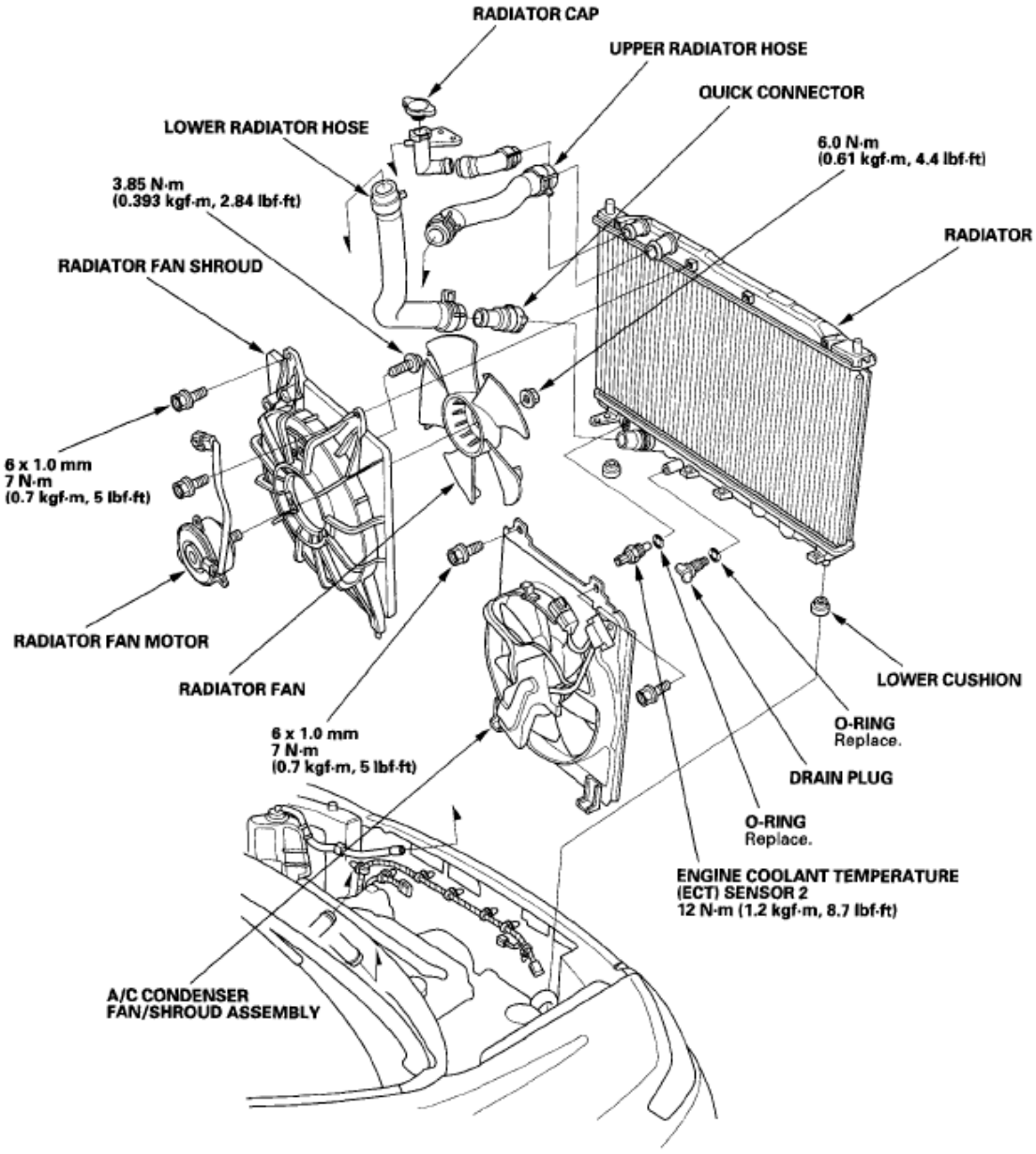

Fig. 39: Identifying Radiator And Fan Components - DENSO - With Tightening Torque
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CoPAR

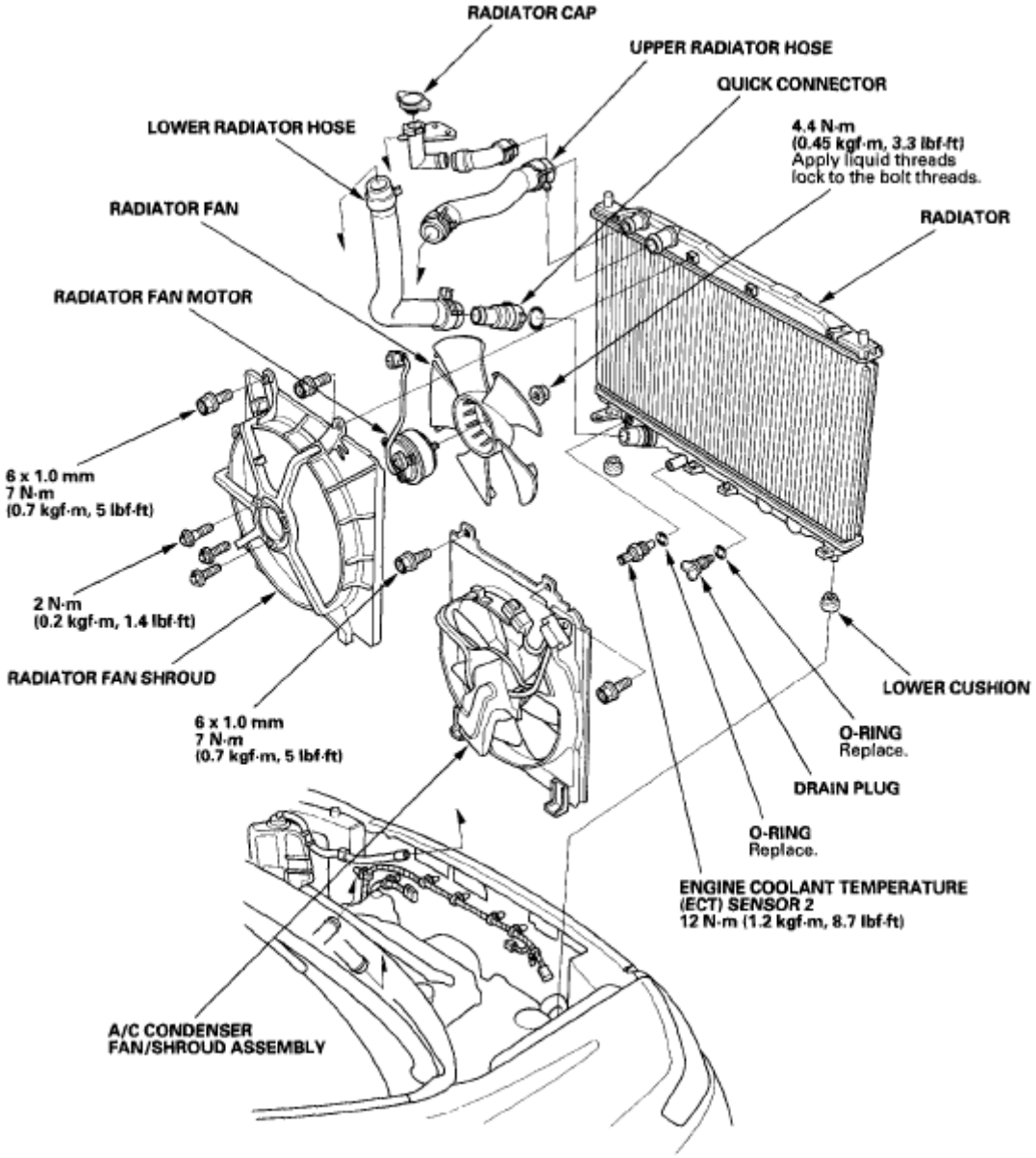

Fig. 40: Identifying Radiator And Fan Components - COPAR - With Tightening Torque
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Install the radiator in the reverse order of removal. Make sure the upper and lower cushions are set securely.
14. Install the bulkhead in the reverse order of removal. Apply body paint to the bulkhead mounting bolts.
15. Install the battery, and connect the positive cable to the battery first, then

connect the negative cable.

16. Enter the anti-theft code for the audio system and the navigation system (if equipped), then enter the audio preset. Set the clock.
17. Fill the radiator with engine coolant and bleed the air (see step 8).